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Effects of Clarity and Group Membership

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EFFECTS OF CLARITY OF INTENTIONS AND GROUP MEMBERSHIP ON RECIPROCITY DECISIONS

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For my parents, Larry and Mayten.
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ABSTRACT

The current study investigated how the clarity of a trusting individual’s intentions to trust and his/her in-group vs. out-group membership affect a trusted party’s decision to reciprocate. Three hundred eighty-two participants completed four rounds of a preprogrammed trust game, each time ostensibly with a different interaction partner. During each round, the ostensible interaction partner was given an endowment by the experimenter, contributed some portion of that endowment to an investment fund (keeping the rest for himself/herself), the investment fund increased in value by some amount, and the participant then decided how much of the (now larger) fund to return to the partner (keeping the rest for him/herself). Participants played two rounds in which they knew the amount of their partner’s initial endowment (clear condition) and two rounds in which they did not know the amount of that endowment (cloaked condition). They also played two rounds with partners who ostensibly possessed the same thinking style as they did (in-group partners) and two rounds with partners who possessed a different thinking style (out-group partners). A 2 x 2 repeated measures Analysis of Variance (ANOVA) revealed a significant Visibility x Group Membership interaction for the amount that participants returned. Follow-up analyses suggest that participants returned significantly less to out-group members than in-group members, but only when the partner’s intentions to trust were obscured. The implications of these findings are that when individuals are aware of others’ intentions to trust, they are likely to use this
information to determine how much to reciprocate. However, individuals are likely to show in-group favoritism when they are unable to determine the other’s intentions to trust.
CHAPTER ONE

INTRODUCTION

Reciprocal-trust relationships are at the very foundation of our social contracts with one another. Trust and the implied promise of reciprocity have real-world effects on how we make decisions in our personal and professional lives. The concepts of trust and reciprocity have been studied extensively across a variety of disciplines, (i.e., economics, psychology, sociology, political science, anthropology, etc.) and on a multitude of levels (interpersonal, organizational, institutional, etc.; Ostrom & Walker, 2005). Across disciplines, the concept of trust is generally regarded as the motivation to accept vulnerability under conditions of risk and interdependency based upon the expectation that the person who is being trusted will reciprocate (Colquitt, Scott, & LePine, 2007; Rousseau, Sitkin, Burt, Camerer, 1998). Reciprocity is defined as the motivation to reward the generous acts of another by responding in a way that is helpful to the other person (Cox, 2004). The reciprocation of an early demonstration of trust can instigate a mutually beneficial cycle of trust and reciprocity (Pillutla, Malhotra, Murnighan, 2002). In contrast, a breach of trust can have a decidedly negative impact on the relationship, particularly when it occurs early on (Lewicki & Bunker, 1995; Kim, Ferrin, Cooper, & Dirks, 2004; Lount, Zhong, Sivanathan, & Murnighan, 2008). Therefore, the very beginning of these relationships is particularly important.
Functioning reciprocal-trust relationships have been linked to a wide range of positive outcomes for just about every type of social interaction imaginable, from economic development (Arrow, 1972; Fukuyama, 1995), to government efficiency (Putnam, Leonardi, & Nanetti 1994), to healthcare relationships (Thorne & Robinson, 2006; Lynn-sMcHale & Deatrick, 2000; Hall, Zheng, Dugan, Camacho, Kidd, Mishra, & Balkrishnan, 2002). When we have received a benefit from another person, and later have an opportunity to give a benefit back to that same person, we often use the level of trust implied by the initial benefit received as a guide to the amount of benefit we should return. For example, suppose an acquaintance gives you $3 to buy a lottery ticket and that ticket ends up winning you $100. How much (if any) of the winnings do you feel obligated to return to the acquaintance? How would the features of the situation and the person you are interacting with impact your decision to reciprocate? The intent of this study is to explore these questions. Specifically, how does the clarity of the trusting individual’s intentions to trust and his/her group membership affect the trusted party’s reciprocity decisions?

Behavioral Approaches to Measuring Trust

There are a variety of methods that researchers use to measure trust and reciprocity. The most popular methods are survey measures that gauge people’s general attitudes towards trust, and behavioral measures that examine the behavior of people within the context of experimental bargaining games that model real-life social dilemmas. A trust game is a particular type of bargaining game in which two players can obtain mutually profitable outcomes, but only if one is willing to trust the other, and that trust is
reciprocated. Berg, Dickhaut, and McCabe (1995) were the first to demonstrate a relationship between trusting and reciprocating behaviors in a laboratory setting using a trust game. The game is played as follows. Suppose an experimenter gives $10 to Player 1, and that Player 1 can either keep the $10 for him/herself or invest some or all of the endowment in a general fund where the amount invested will be tripled (e.g., if the whole $10 endowment is invested, the general fund will be worth $30). The general fund, however, is under the control of Player 2, who must decide how much of the (now larger sum of) money should be returned to Player 1. Player 2 may give all, some, or none of the money in the general fund back to Player 1, keeping the remainder of the money for him/herself. If Player 1 trusts Player 2 to return a fair share of the larger sum, then Player 1 should choose to invest most or all of the money received from the experimenter in the general fund. In other words, a larger investment by Player 1 is a sign of greater trust. Player 2 may reciprocate Player 1’s trust by giving Player 1 more money from the fund than Player 1 would otherwise have been able to make simply by keeping all of the initial endowment for him/herself. Ever since its introduction, the trust game has been a popular instrument for studying reciprocal trust relationships across a wide variety of circumstances (e.g., Bolle, 1998; Ortmann, Fitzgerald, and Boeing, 2000; Chaudhuri, Khan, Lakshmiratan, Py, and Shah, 2003; Cox, 2004; Karlan, 2005; Garbarino and Slonim, 2009; Falk, Fehr, and Fischbacher, 2008).

Many variations of the trust game have been employed. One distinction is between repeated trust games, where participants play the trust game more than once, (either with the same or different partners), and one-shot trust games where participants
only play the trust game once either as Player 1 or as Player 2. Experiments that use repeated trust games are generally concerned with the way reciprocal trust relationships are developed and maintained, the effects of experience playing the game (van Miltenbrug, Buskens, & Ruab, 2012), how reputations are formed and maintained (Anderhub, Engelmann, Werner, & Guth, 2002), the effects of binding versus non-bind contracts (Malhotra & Murnighan, 2002), punishment effects, and end-game effects (Engle-Warnick & Slonim, 2004). One-shot trust games, on the other hand, are generally used to test assumptions about reciprocal-trust interactions in the absence of reputation management opportunities, contractual obligations, and the potential to punish or be punished (Berg, et al. 1995).

While the majority of studies use trust games to examine reciprocal-trust relationships from the perspectives of both Player 1 (the person who is doing the trusting) and Player 2 (the person who is reciprocating trust), some studies focus only on one player by holding constant (or experimentally manipulating) the behavior of the other. Studies focused on Player 1 have tested assumptions about the personal and situational factors that lead people to trust. They have also tested whether or not there is a relationship between risk aversion and trust (Bohnet & Zeckhauser, 2004; Eckel & Wilson 2004), the effect of heterogeneity of incentives (Anderson, Mellor, & Milyo), and monetary compensation on repairing trust (Desmet, Cremer, Dijk, 2011). Also, there are a number of studies that focus on reciprocal-trust relationships and interactions solely from the perspective of Player 2 (the person who is reciprocating the trust). Studies focused on Player 2 have examined the neural correlates of reciprocity (van den Bos,
Dijk, Westenberg, Rombouts, Crone, 2009), participants responsiveness to having been trusted by Player 1 (Bacharach, Guerra, & Zizzo, 2007) and the effect of pre-game communication (promises) on reciprocity (Charness & Dufwenberg, 2006).

Delton, Krasnow, Cosmides and, Tooby (2011) argue that in reciprocal-trust situations, people must weigh the cost of mistaking a one-shot interaction for a repeated interaction against the much higher cost of mistaking a repeated interaction for a one-shot interaction. When individuals mistake a one-shot interaction for a repeated interaction, the person who is in the position of Player 1 risks a single chance of being exploited and the person who is in the position of Player 2 misses a single opportunity to make more money at the expense of Player 1. By contrast, when individuals mistake a repeated interaction for a one-shot interaction, and one of them chooses to act selfishly, both players risk missing out on the long-term mutual benefits that multiple cooperative interactions can yield.

Delton et al. (2011) postulate that human beings are naturally selected to make decisions about whether they will act generously or selfishly based upon whether an interaction is likely to be repeated or one-shot. In the real world, people usually have no good way of knowing whether an interaction will truly be one-shot. As long as the other person is still alive, the probability that we will engage in another interaction with him/her is greater than zero. Even so, we base our perceptions about the probability of an interaction being one-shot or repeated on both the characteristics of the interaction partner and the characteristics of the situation. Delton et al. (2011) argue that because the costs associated with mistaking a repeated interaction for a one-shot interaction are so
much more severe than mistaking a one-shot interaction for a repeated interaction, human beings have been naturally selected to cooperate even in the absence of the reputational consequences, genetic relatedness, and other conditions that might favor reciprocity.

Using agent-based computational simulations, these researchers found that the asymmetric costs associated with making an error concerning whether or not an interaction is truly one-shot shifts decision making thresholds towards cooperation, thus providing support for their hypothesis that humans are naturally selected to trust and reciprocate even in the face of strong evidence that the interaction may be one-shot.

Glaeser, Laibson, Scheinkman, and Soutter (2000) tested the degree to which survey measures of generalized trust predict trust and/or reciprocity in experimental bargaining games. They hypothesized that if both questionnaires and experimental bargaining games were measuring the same underlying concept, then trust as measured by attitudinal survey questions should be highly correlated with trust as measured by the experimental bargaining games. Surprisingly, the results indicated that there was no correlation between survey measures and behavior as observed in the trust game. However, they did find a significant positive correlation between reciprocity (as measured by the proportion of money returned by Player 2 during the trust game) and the survey measures. Given these results, Glaeser et al. (2000) concluded that the standard attitudinal trust questions may be a better measure of reciprocity than trust.

**Reciprocity**

In order to investigate the proximal determinants of reciprocity, McCabe, Rigdon, & Smith (2003) used a simple trust game like that described above to test the hypothesis
that Player 2 will be more likely to reciprocate when Player 1’s intentions are easy to read and provide clear evidence that Player 1 has trusted him/her. They compared the results for participants engaged in a voluntary trust game to results for participants engaged in an involuntary trust game. In the voluntary trust game Player 1 had two options, either to invest in the general fund under player 2’s control or not to invest in it. In this game, investing implied trust precisely because Player 1 had the option not to invest. In the involuntary trust game, by contrast, Player 1 had only one option, which was to invest in the general fund. Here investing does not necessarily imply that Player 1 trusts Player 2, as Player 1 could do nothing else. The authors found that Player 2 typically reciprocated less (i.e., gave less money back to Player 1, and kept more money for him/herself) in the involuntary trust game, where his/her ability to infer Player 1’s intentions were restricted by the structure of the game, compared to the voluntary trust game. These findings support the hypothesis that reciprocating behaviors are rooted in the interpretations of the other’s intentions (McCabe, et al. 2003; Dufwenberg and Kirchsteiger, 2004; Falk & Fischbacher, 2006). Additionally, McCabe et al. (2003) speculate that anything that obscures the motives of Player 1 is likely to result in less reciprocation by Player 2.

In the present study, I tested this idea by using a different and more ecologically valid method of obscuring the intentions of Player 1. In this study, I hid, from Player 2, the amount of the endowment initially given to Player 1 by the experimenter, thereby leaving Player 2 with an uncertain behavioral index of the degree to which Player 1 has trusted him/her.
Previous research indicates that under clear conditions, where Player 2 has full knowledge of (a) the amount of the endowment given to Player 1 and (b) by how much Player 1’s investment was multiplied, the amount that Player 2 receives is positively correlated with the amount that Player 2 reciprocates (Malhotra, 2004). Pillutla, Malhotra, and Murnighan (2003) found that there was a positive correlation not only between the absolute amounts donated and reciprocated, but also between the percentage of the amounts donated and reciprocated. Further, in a study that investigated the development of trust and reciprocity in adolescents, van den Bos, Westenberg, van Dijk, and Crone (2010) found that participants were more likely to reciprocate when they received more, but also that they were sensitive to the amount of risk that Player 1 had accepted by trusting them. That is, Player 2 reciprocated more when she/he perceived Player 1’s risk to be high. Both studies suggest that an increase in trust is associated with an increase in reciprocity.

**In-Group Bias**

Even when we lack pertinent behavioral information about our interaction partners, we may automatically assume that members of our in-group are both trustworthy and trusting of us. Previous research indicates that we are likely to show biases that favor our in-group. Tajfel, Billig, Bundy, and Flament (1971), for example, demonstrated that merely categorizing another as an in-group member is enough to cause in-group favoritism. That is, in situations where they were tasked with allocating rewards to others based solely on knowledge of the others’ in-group or out-group status, participants consistently allocated more rewards to those who were members of their in-
group than to those who were members of an out-group. This effect of mere
categorization has been replicated dozens of times in a variety of different contexts, thus
indicating its robustness (e.g., Otten & Moskowitz, 2000; Brewer, 1979; Dovidio,

Etang, Fielding, and Knowles (2011) also investigated the effect of in-group bias
on trust and reciprocity in rural Cameroon. Participants played a trust game with either a
fellow villager or a person from a different village. The results revealed that there was an
in-group bias effect for trust, but not for reciprocity. Participants in the role of Player 1
invested more money in the general fund when Player 2 was a fellow villager. However,
there was no difference in the size or frequency of reciprocation across treatment groups.
A study conducted by Smith (2011), investigating the effect of in-group bias in ad-hoc
groups also found an effect for trust but not for reciprocity.

In order to determine whether participant’s behavior in an experimental
bargaining game could predict real life loan repayment, Karlan (2005) conducted a study
examining the behaviors of borrowers in a microcredit program in Peru. Karlan
compared participant’s behavior in a trust game, as well as their responses to trust-related
survey measures, to their real life rate of loan repayment and financial savings one year
later. The results revealed, again, that in-group bias had an effect on trusting behavior,
but not on reciprocation. That is, Player 1 donated 24% more points to Player 2 if both
players were indigenous. However, Player 2 behaved the same regardless of whether
Player 1 was indigenous or western. Whether or not participants attended the same
church showed a similar pattern.
Consistent with the findings of Glaeser et al. (2000), Karlan (2005) also found that the trust-related survey measures predicted reciprocity in the bargaining game, but not trusting. Further, the more those in the role of Player 2 reciprocated, the less likely they were to default on the loan, and the higher their rate of voluntary savings. In contrast, the trusting behavior of those in the role of Player 1 was associated with having more repayment problems due to discipline or default, and saving less. Karlan proposes that the way the trust game is structured makes the concept of trust difficult to distinguish from risk. That is, it is difficult to discern whether Player 1 is donating money because he/she trusts Player 2, or because he/she is a risk taker, and lacks the ability to recognize a bad investment. However, Karlan suggests there is strong and clear support for the behavior of Player 2 to serve as a measure of reciprocity.

Tanis and Postmes (2005) tested the effect that perceived trustworthiness as a function of group membership and cues to personal identity (portrait pictures and first names) have on trusting behaviors. The results indicated that there was a positive correlation between personal identifiability of Player 2 and the trusting behavior of Player 1 (regardless of group membership). Results also indicated that Player 1’s expected the least amount of reciprocity from unidentifiable out-group members, indicating that reciprocity expectations were only affected by group membership when Player 2 was personally unidentifiable. Finally, there was a relationship between expectations of reciprocity and trusting behavior. Results demonstrate that this relationship was mediated by cues to personal identity and group membership.
Hypotheses

Based upon the previously discussed research, three hypotheses emerge regarding how the joint effects of clarity of intentions to trust and the group membership of the trusting individual are likely to affect the trusted party’s reciprocity decisions.

Hypothesis 1: Trusted parties will be more likely to reciprocate when the trusting individual’s intentions to trust are clear.

Hypothesis 2: Trusted parties will return significantly less to out-group members than to in-group members, but only when the other person’s intentions to trust have been obscured.

Hypothesis 3: In comparison to all other conditions, trusted parties will reciprocate least to out-group members whose intentions to trust have been obscured.

The following study was conducted to test these hypotheses.
CHAPTER TWO

METHOD

Participants

Three hundred eighty-two adults between the ages of 18 and 71 were recruited from Craigslist.com (a classified advertisement website), Twitter (a popular social networking website), and Amazon’s Mechanical Turk (Mturk, a popular crowdsourcing internet marketplace) to participate in this online study. As an incentive, they were informed that 1 in 10 participants would win an Amazon Gift card, and that the value of the gift card would depend in part on the decisions they made during the investment activity. Individuals who were interested in participating in the study were instructed to click on a link that took them from the Craigslist, Twitter, or Mturk website to the study website luchthinkingstylesstudy.com.

Research Design and Investment Activity

This study utilized a 2 (visibility: clear vs. cloaked) x 2 (group membership: in-group vs. out-group) completely within-subjects experimental design. Participants played four rounds of an online trust game, and were led to believe that they were playing it with other real people. In fact, however, they were actually playing with the computer, and the behavior of their interaction partners were all preprogrammed.

Each round of the trust game involved two players, Player 1, the investor, and Player 2, the fund manager. All participants were assigned to play the role of Player 2. At the start
of each round, Player 1 was apparently given an endowment of $5, $10, or $15, as randomly determined by an Endowment Spinner. Player 1 was then invited to contribute to an investment fund whatever portion of that endowment he/she wanted, keeping the rest for himself/herself. The amount that Player 1 contributed to the investment fund was then doubled, tripled, or quadrupled (which was randomly determined by a Multiplier Spinner), with the constraint that the resultant fund size be either $16 or $18. Next, Player 2 (the participant) was asked to decide how much (if any) of the $16 or $18 he/she would return to Player 1, keeping the remainder for himself/herself.

In the clear condition, participants were able to see the exact amount that Player 1 started with, via the outcome of the Endowment Spinner. They were also able to see how much Player 1 invested in the general fund, and by how much the investment was multiplied. By contrast, in the cloaked condition, participants were led to believe that the software running on Player 1’s computer was incompatible with the software used to display the spinners, and received the following message on their screen, “The other participant has JavaScript disabled; spinner values cannot be displayed.” Therefore, while Player 1 presumably knew the outcome of both spinners, Player 2 knew only the total amount in the investment fund after it had already been multiplied. Specifically, Player 2 did not know the size of the endowment, how much Player 1 had contributed to the general fund, or by how much the contents of the general fund had been multiplied.

In addition to manipulating visibility (clear or cloaked), this study also manipulated the group membership of Player 1. Each participant played two rounds (one in the clear condition and one in the cloaked condition) with a simulated other whom they
were led to believe possessed the same thinking style they did, and thus were members of their in-group. They also played two rounds with a simulated other alleged to possess a different thinking style than they did, and thus were members of their out-group.

The order in which participants played the four different types of rounds, the amount of Player 1’s initial endowment, the proportion of this amount that Player 1 placed into the general fund (which was always set at 60%, 53%, 40%, or 27%), and the total amount in the general fund, were fully crossed to produce 96 cells. I intended for each cell to contain the data from four participants, but, due to experimenter error, two of the cells contain only the data from three participants. However, this does not violate any of the assumptions of the subsequent statistical analyses.

Procedure

**Informed Consent.** After a welcome page individuals were asked to report how they heard about the study (see Appendix A). Afterwards, individuals were led to the informed consent portion of the site (the informed consent portion of the site is slightly different for Mturkers, therefore both versions have been included in Appendix B). The procedure, compensation, and consent portion of the site included a brief overview of the study, stated that 1 in 10 participants would win an Amazon gift card, and that the value of the gift card would depend on the decisions made during the investment activity. Individuals were also provided with a confidentiality statement, the researchers’ contact information, and a statement of consent. They were only allowed to participate in the experiment after agreeing with the statement, “I am at least 18 years old and I agree to
participate.” After agreeing, participants were instructed to sign-in, using their name and e-mail address (see Appendix C).

**Situational Preferences Questionnaire.** After signing-in, participants were assigned an ID number and provided instructions for completing a nine-item forced choice “situational preferences questionnaire” (SPQ) (see Appendix D) that was based on the much broader 104-item “thinking styles inventory” (Sternberg & Wagner, 1992). Participants were told that this questionnaire identified the thinking style they possessed according to the types of situations they preferred. After completing the questionnaire, all participants were led to believe that they possessed a “P” thinking style, and were told that the nature of that thinking style would be explained later.

**Investment Activity Instructions.** After completing the questionnaire, participants were provided with the trust game instructions (see Appendix E). The instructions indicated that participants would be making a series of investment-related decisions with several other participants who allegedly were currently on-line. However, they were told that the only information they would have about those other participants, and that the other participants would have about them, was their identification number and the letter identifying their thinking style. Participants were cautioned that while some of their interaction partners might possess the same thinking style as they did (their in-group), others might possess a different thinking style (their out-group). After reading the investment activity instructions, as well as seeing a detailed example of how the game was played, participants were asked to “click ‘Next’” to determine whether they would be playing the role of Investor (Player 1) or Fund Manager (Player 2). All participants were
assigned to the role of the Fund Manager and asked to click “Next” when they were ready to begin the first round.

**Investment Activity.** Participants then played four rounds of the trust game. In each round they played the role of the Fund Manager, each time ostensibly with a different interaction partner whose responses as the Investor were preprogrammed. For each interaction partner, participants were able to see only the partner's identification number and thinking style identification letter. They played two rounds with simulated others who were identified as having the same thinking style (P) as theirs (i.e., simulated others who were members of their in-group) and two rounds with simulated others who were identified as having a different thinking style (G) from their own (i.e., simulated others who were members of their out-group). The order of the four rounds was randomized, with each round involving a different combination of group membership (in-group vs. out-group) and Player 1’s clarity of intentions (clear vs. cloaked).

**Compensation.** Just before playing the first round of the investment activity, participants were advised to make wise decisions, because 1-in-10 participants would be randomly selected to receive an Amazon gift card. The value of the gift card would be determined by the dollar amount that the selected participants ended up with at the end of one of the investment activity rounds. They were informed that the winning round would also be randomly determined, that the winning round would be the same for all participants. Finally, they were told that after all of the data for the study had been collected, all participants would be notified via e-mail as to whether or not they had been selected to win a gift card.
**Video.** After the investment game, participants watched a brief video and completed a short questionnaire about what they had seen in the video (see Appendix: H). This served as a distraction to prevent participants from guessing the true purpose of the study.

**Manipulation Check.** Finally, participants filled out an exit questionnaire (see Appendix I). This questionnaire contained manipulation checks intended to discern the degree to which participants believed they were interacting with a real person, and asked for basic demographic information. After completing the exit questionnaire, participants were thanked for their participation and reminded that they would be notified by email about whether or not they would receive an Amazon gift card. Participants then clicked an “exit” button, which redirected them to the Loyola University Chicago homepage.

**Debriefing.** After all the data had been collected, the second round of the investment activity was randomly selected as the round for which 1-in-10 participants would receive an Amazon Gift Card. Additionally, the SPQ was scored to determine the thinking style it indicated. The items used in the SPQ differentiated between two thinking styles: global and local (Sternberg & Wagner, 1992). Therefore, two sets of debriefing statements were distributed; one for participants who were identified as possessing a Global thinking style and one for participants who were identified as possessing a Local thinking style (see Appendix J). The only difference between these two statements is one sentence explaining which thinking style they possessed (according to the Situational Preferences Questionnaire), and the nature of that thinking style. The debriefing statement also indicated whether or not the participant had been randomly
selected to win an Amazon gift card, and if so, the amount of the gift card (as determined by the amount they ended up with at the end of the second round of the investment activity).
CHAPTER THREE

RESULTS

Manipulation Checks

Five items were included in the exit questionnaire to assess the effectiveness of the group categorization manipulation, the cloaking manipulation, and to discern whether participants believed that they were interacting with a real person. However, all participants did not reach the exit questionnaire. Of the total sample, 64% (245 out of 382) completed the exit questionnaire. Most participants, 80% (197 out of 245), were either completely accurate or only off by one in reporting that they had completed either 4 rounds of the investment activity. Similarly, most participants, 84% (203 out of 245), were either completely accurate or only off by one in reporting that they had completed 2 rounds of the investment activity (96 out of 245) with in-group interaction partners. Nearly all participants, 99% (192 out of 193), reported that some of their interaction partners appeared to experience computer difficulties, noting that some experienced problems with JavaScript, and that this prevented them from being able to determine the outcome of the spinners.

If participants did not believe that they were interacting with a real person, I assumed that they would not have returned anything. Only 6% (25 out of 382) returned $0 for each interaction. Of these twenty-five, twenty-four completed the exit questionnaire and only one explicitly stated disbelief. Additionally, there were only two participants whose actions and statements did not align. One participant, when asked...
what he/she believed the purpose of the study was, responded “not sure these people really existed,” but returned a mean amount of $4.75. The other participant, when asked the same question, responded by saying “not sure, but I don’t think the JavaScript thing was real,” but returned an average of $6. These participants may only have started to suspect that the other person wasn’t real because of the nature of the questions in the exit questionnaire. Overall, the data suggest that the group membership manipulation worked, and that most people either believed that they were interacting with another person, or were not confident enough in their belief that the other person did not exist to act as if he/she did not exist.

**Test of the Hypotheses**

The cell means and SDs for each of the four main experimental conditions are found in Table 1. These means are plotted in Figure 1.

**Hypothesis 1.** Hypothesis 1 stated that trusted parties would be more likely to reciprocate when the trusting individual’s intentions to trust were clear. I conducted a 2 (visibility: clear vs. cloaked) x 2 (group membership: in-group vs. out-group) repeated measures Analysis of Variance (ANOVA) on the amount of money that participants returned to the Player 1. Hypothesis 1 was tested by examining the visibility main effect from this analysis. Mauchly’s test of sphericity was non-significant. Therefore, it can be assumed that the variances of difference scores are roughly equal in this sample. The analysis revealed that the main effect of visibility was not significant, $F(1, 381) = 1.68, p = .20$. Contrary to the first hypothesis, this finding suggests that visibility alone does not predict reciprocity (the amount returned).
Table 1. Means & Standard Deviations of Amount Returned (N=382)

<table>
<thead>
<tr>
<th>Condition</th>
<th>$M$</th>
<th>$SD$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clear</td>
<td></td>
<td></td>
</tr>
<tr>
<td>In-Group</td>
<td>5.57</td>
<td>3.56</td>
</tr>
<tr>
<td>Out-Group</td>
<td>5.88</td>
<td>3.52</td>
</tr>
<tr>
<td>Cloaked</td>
<td></td>
<td></td>
</tr>
<tr>
<td>In-Group</td>
<td>5.77</td>
<td>3.93</td>
</tr>
<tr>
<td>Out-Group</td>
<td>5.32</td>
<td>3.86</td>
</tr>
</tbody>
</table>

Figure 1. Mean Amount of Money Returned in Each Condition (N = 382).
**Hypothesis 2.** Hypothesis 2 stated that trusted parties would return significantly less to out-group members, but only when the other person’s intentions to trust had been obscured. Hypothesis 2 was tested by examining the two-way interaction from the ANOVA described above. As expected, there was a significant Visibility x Group Membership interaction, $F(1, 381) = 11.87, p < .01, \eta^2 = .03$. As can be seen in Figure 1, the relation between group membership and reciprocity depended upon whether or not the trusting individual’s intentions were clear. The pattern of results indicates that there is a crossover interaction. A paired samples t-test revealed that, as predicted, participants in the cloaked condition returned significantly less to the out-group member ($M = 5.32, SD = 3.86$) than to the in-group member ($M = 5.77, SD = 3.93$), $t(381) = 2.96, p < .01, \eta^2 = .02$. By contrast, participants in the clear condition returned significantly less to in-group members ($M = 5.57, SD = 3.56$) than they returned to out-group members ($M = 5.88, SD = 3.52$), $t(381) = -2.01, p < .05, \eta^2 = .01$. Taken together, these results provide strong support for Hypothesis 2.

**Hypothesis 3.** Hypothesis 3 stated that in comparison to all other conditions, trusted parties would reciprocate least to trusting out-group members whose intentions to trust had been obscured. In order to test this hypothesis, I conducted a series of one-tailed paired sample t-tests comparing the out-group / cloaked condition to all other conditions (Table 2). The results revealed that participants returned significantly less in the out-group / cloaked condition than in all other conditions except one, the in-group / clear condition. Although descriptively participants returned less to the out-group / cloaked condition ($M = 5.32, SD = 3.86$) than the in-group / clear condition ($M = 5.57$, \ldots)
SD$ = 3.56)$, the difference was not significant $t (381) = -1.473, p = .07$. Therefore, the results provide only partial support for the third hypothesis.

Table 2. T-tests Comparing Out-Group Cloaked Condition.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Mean</th>
<th>$t$</th>
<th>$df$</th>
<th>$p$ (1-tailed)</th>
<th>$r^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Out-Group / Cloaked vs.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In-Group / Cloaked</td>
<td>.45</td>
<td>2.96</td>
<td>381</td>
<td>&lt;.001</td>
<td>0.02</td>
</tr>
<tr>
<td>Out-Group / Clear</td>
<td>.56</td>
<td>3.43</td>
<td>381</td>
<td>&lt;.001</td>
<td>0.03</td>
</tr>
<tr>
<td>In-Group / Clear</td>
<td>.25</td>
<td>1.47</td>
<td>381</td>
<td>&lt;.07</td>
<td>0.01</td>
</tr>
</tbody>
</table>

Time

Previous studies using repeated trust games with the same interaction partner has found that both trust and reciprocity erode over time. To control methodologically for the effect of time, counterbalanced across participants the order in which the various treatment combinations were presented, so that each occurred an equal number of times in each round (first, second, third, and fourth). I also tried to make it clear to participants that they would be playing with a different interaction partner in each round of the investment activity, in the hope that participants would mentally “reset” themselves and treat each partner the same as they treated their first partner. In order to test statistically for whether or not there was an effect of time in this study, I conducted a one-way repeated measures ANOVA on the amounts returned in each round. Mauchly’s test of sphericity was non-significant. The analysis revealed that there was a significant effect
of time on the amounts returned, $F(1, 381) = 35.67, p < .001, \eta_p^2 = .04$). The means and standard deviations of each round are displayed in Table 3. As can be seen in Figure 2, participants returned less over time.

Table 3. Means & Standard Deviations for Each Round (N = 382)

<table>
<thead>
<tr>
<th>Round</th>
<th>$M$</th>
<th>$SD$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6.25</td>
<td>3.71</td>
</tr>
<tr>
<td>2</td>
<td>5.66</td>
<td>3.65</td>
</tr>
<tr>
<td>3</td>
<td>5.46</td>
<td>3.83</td>
</tr>
<tr>
<td>4</td>
<td>5.17</td>
<td>3.64</td>
</tr>
</tbody>
</table>

Figure 2. Mean Amount Returned in Each Round
Adjusting for Time

To eliminate the effect of time, I used the means and standard deviations of each round to transform the amounts returned in each condition into standard scores by subtracting the mean for that particular round from the amount returned and dividing by the standard deviation for that round. For example, if a participant in the in-group/clear condition had returned $9 during the first round of the investment activity, then his/her standard score would be \((9.00 - 6.25) / 3.71\) = .74 (using the mean and standard deviation found in Table 3.). These standard scores reflect the degree to which the amount returned was above or below the mean in standard deviation units.

Test of the Hypotheses Using Time Standardized Scores

I conducted a 2 (visibility: clear vs. cloaked) x 2 (group membership: in-group vs. out-group) repeated measures Analysis of Variance (ANOVA) on the time standardized scores. Mauchly’s test of sphericity remained non-significant. Therefore, it can be assumed that the variances of difference scores remained roughly equal. Similar to the ANOVA for the raw scores, this analysis revealed that, that the main effect of visibility was not significant, \(F(1, 381) = 1.91, p = .17\). The Visibility x Group Membership interaction predicting reciprocity remained significant, \(F(1, 381) = 12.14, p < .01, \eta^2 = .03\), and the pattern of the means remained the same as before (see Figure 3, Table 4, and Table 5). Thus, even when accounting for the effect of time, the data still provides strong support for hypothesis 2, some support for hypothesis 3, and no support for hypothesis 1.
Table 4. Means & Standard Deviations of Each Condition (N=382)

<table>
<thead>
<tr>
<th>Condition</th>
<th>$M$</th>
<th>$SD$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clear</td>
<td></td>
<td></td>
</tr>
<tr>
<td>In-Group</td>
<td>-.02</td>
<td>.96</td>
</tr>
<tr>
<td>Out-Group</td>
<td>.07</td>
<td>.94</td>
</tr>
<tr>
<td>Cloaked</td>
<td></td>
<td></td>
</tr>
<tr>
<td>In-Group</td>
<td>.04</td>
<td>1.05</td>
</tr>
<tr>
<td>Out-Group</td>
<td>-.09</td>
<td>1.03</td>
</tr>
</tbody>
</table>

Figure 3. Means for Time Standardized Scores for Each Condition (N = 382).
Table 5. Standardized T-tests Comparing Out-Group Cloaked

<table>
<thead>
<tr>
<th>Condition</th>
<th>Mean Difference</th>
<th>t</th>
<th>df</th>
<th>p (1-tailed)</th>
<th>$r^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Out-Group / Cloaked</td>
<td>-.12</td>
<td>-2.99</td>
<td>381</td>
<td>&lt;.001</td>
<td>0.02</td>
</tr>
<tr>
<td>In-Group / Cloaked</td>
<td>-.15</td>
<td>-3.55</td>
<td>381</td>
<td>&lt;.001</td>
<td>0.03</td>
</tr>
<tr>
<td>Out-Group / Clear</td>
<td>-.07</td>
<td>-1.56</td>
<td>381</td>
<td>&lt;.06</td>
<td>0.01</td>
</tr>
<tr>
<td>In-Group / Clear</td>
<td>-.12</td>
<td>-2.99</td>
<td>381</td>
<td>&lt;.001</td>
<td>0.02</td>
</tr>
</tbody>
</table>

**Additional Findings**

In addition to the findings that were related to the hypotheses (e.g. there not being a main effect for visibility and an interaction between visibility and group membership), the 2 x 2 repeated measures ANOVA for the raw amounts returned also revealed that there was no main effect of group membership, $F(1,381) = 1.68, p = .20$. This suggests that group membership alone does not predict reciprocity. The results of the 2 x 2 repeated measures ANOVA for the time standardized scores were similar, $F(1,381) = 1.91, p = .17$. Also, a paired samples t-test for the raw amounts returned revealed that participants returned significantly more to out-group members in the clear condition ($M = 5.88, SD = 3.52$) than in the cloaked condition ($M = 5.32, SD = 3.86$), $t(381) = 3.43, p < .01, r^2 = .03$. 
CHAPTER FOUR
DISCUSSION

The results of this study did not find support for Hypothesis 1, which stated that trusted parties would be more likely to reciprocate when the trusting individual’s intentions to trust were clear. However, there was strong support for Hypothesis 2, which stated that trusted parties would return significantly less to out-group members, but only when the other person’s intentions to trust had been obscured. Indeed, when intentions to trust were not obscured, they did just the opposite, returning more to the out-group than to the in-group member. Finally, there was some support for hypothesis 3, which stated that in comparison to all other conditions, trusted parties would reciprocate least to trusting out-group members whose intentions to trust had been obscured.

The question first raised in the introduction asked to what degree the features of the situation and the person one is interacting with likely to affect one’s decision to reciprocate, when one has received a benefit from another person. The results indicate that most individuals would probably reciprocate. Most individuals in this study returned some portion of the money. Very few participants opted to keep all of the money for themselves, returning $0 on each round. Additionally, the results suggest that participants did not base their decision about how much to reciprocate exclusively on either the other person’s group membership or the clarity of that person’s intentions to trust. Rather, the results suggest that these two factors (visibility and group membership)
interact to impact reciprocity decisions. Specifically, individuals were likely to return less to an out-group member than to an in-group member when the other person’s intentions to trust were obscured, and the reverse when the other’s intentions were not obscured.

This research makes several contributions to the understanding of reciprocity, the effect of clarity, and intergroup relations. In contrast, to the findings of McCabe et al. (2003), which found that Player 2 was more likely to reciprocate when Player 1’s intentions to trust were clear, and their speculation that anything that obscures the motives of Player 1 is likely to result in less reciprocation by Player 2, the results of the present study did not indicate an overall main effect of visibility of trusting intentions. That is, obscuring the motives of Player 1 did not universally result in less reciprocation by Player 2. Rather, this study uncovered an interaction between group membership and visibility. The nature of this interaction suggest that when Player 1’s intentions to trust were obscured, Player 2 only reciprocated less to Player 1 when Player 1 was an out-group member, and even reciprocated more when Player 1 was an in-group member. These findings suggest that the relationship between visibility of intentions and group membership may be more nuanced than the findings of the McCabe et al. (2003) study suggest.

Additionally, previous research examining the relationship between trust, reciprocity, and group membership within the context of trust games (e.g., Etang et al. (2011); Smith (2011); and Karlan (2005)) have demonstrated an effect of in-group bias for trust, but not for reciprocity. The results of the current study are consistent with these
findings, to the extent that there was not a main effect of group membership for 
reciprocity. However, there was an interaction between group membership and visibility, 
in that participants demonstrated in-group favoritism in the cloaked condition, but 
surprisingly, out-group favoritism in the clear condition. Thus, group membership may 
in fact affect reciprocity as well as trust, but the degree to which individuals are likely to 
demonstrate in-group, or even out-group, favoritism depends upon the clarity of the 
trust party’s intentions to trust.

Limitations

One limitation of this study is that it was conducted online, using simulated 
interaction partners. Participants may not have believed that there was another person on 
the opposite end of the interaction. Twenty-five people (6%) did not return any money 
during any of the four rounds. Johnson and Mislin’s (2011) meta-analysis of 162 
replications of Berg et al.’s (1995) trust game found that playing with simulated partner, 
instead of a real partner was associated with Player 1 contributing nearly 60% of a 
standard deviation less than when participants played with real partners. Although this 
same effect was not found for people in the position of Player 2, it suggest that 
experimenters’ efforts to deceive participants may not always be successful, and that 
participants are likely to behave differently when they do not believe that another real 
participant is on the other end of the interaction.

Another limitation of this study was the magnitude and certainty of obtaining the 
incentive. In this study, participants were given a 1 in 10 chance of winning an Amazon 
Gift Card for the amount that they walked away with at the end of one of the rounds.
Johnson and Mislin’s (2011) meta-analysis also found that participants in the position of Player 1 invested nearly 60% of a standard deviation less into the general fund when payment was random, as it was in this study. Although the focus of this study was on the behavior of Player 2, it is plausible that the added risk associated with the payout may have caused participants to behave differently. It is possible that allowing participants to keep the money that they walked away with at the end of each round would have incentivized them to reciprocate less. If they got to keep the money at the end of each round, instead of only having a 10% chance of keeping it, they may have felt more of a sense of psychological ownership of the money, and as a result may have tried to keep more of it for themselves.

**Possible Mechanism**

One of the unexpected outcomes of this study is that participants returned significantly more to out-group members than to in-group members in the clear condition. One reason that occurred may have been because participants had higher expectations of their in-group. That is, participants may have been disappointed that their in-group interaction partners only trusted them with a maximum of 60% of their endowment. As a result, they may have sought to punish them by reciprocating less. Conversely, it is possible that participants had lower expectations of their out-group partners, and may have been pleasantly surprised that their out-group partners trusted them with as much as 60% of their endowment. As a result, they may have sought to reward their out-group partners by returning more money to them.
The idea that participants may have held higher expectations of their in-group members is congruent with the findings of Foddy, Platow, and Yamagishi (2009), who observed that preferences for in-group members can be eliminated by telling participants that the other person, who has been tasked with allocating funds to the participant, will not be able to see whether the participant is an in-group or out-group member. The results of their study supported the researchers’ hypothesis that in-group bias may not emerge from positive stereotypes of the in-group (e.g., in-group members are better people than out-group members, and therefore more altruistic overall), but rather from the expectation that in-group members will be particularly altruistic towards other in-group members.

Similarly, if participants in the cloaked condition for this study assumed that their in-group interaction partners had trusted them with a greater proportion of the money, it makes sense that participants would return more to them. However, if participants had assumed that their fellow in-group members would be especially trusting of them, then they may have been insulted when playing the trust game in the clear condition and able to see that Player 1 had contributed only 27% - 60% of the money, thus prompting less reciprocation. This idea is also supported by Pilluta et al. (2003), who found that when trusting party’s contributed less than 90-100% of their endowment to the general fund, that trusted party’s interpreted this as a lack of trust, and felt less obligated to reciprocate.

**Future Directions**

Although the above explanation for the reason that participants returned more to out-group members than to in-group members in the clear condition appears tenable, it
remains speculative. A direct measure of expectations was not included in this study. Additional research that assesses the degree to which Player 1’s contribution to the general fund failed to meet, met, or exceeded the participants’ expectations, and whether participants’ expectations are higher for in-group members than they are for out-group members, would be needed to establish the accuracy of this explanation.

Another direction of future research concerns the way that visibility was manipulated in this study. In this study, participants were not given an explanation as to why the JavaScript error occurred. It is plausible that one of the reasons that participants returned less to out-group members in the cloaked condition is because they believed that out-group member purposefully caused the JavaScript error in order to hide the fact that they had contributed only a small portion of the endowment to the general fund. Again, this explanation is only speculative, as this study did not include a direct measure of blame. Additional research accessing the degree to which participants are more or less likely to attribute the cause of an ambiguous communication disturbance to the willful actions of an out-group interaction partner would need to be conducted in order to support this claim.
APPENDIX A

WELCOME PAGE
Welcome to the LUC Thinking Styles Study

Continue

How did you hear about this study?

- twitter.com
- craigslist.com
- mturk.com
- Other
APPENDIX B

PROCEDURES, COMPENSATION, AND CONSENT
Procedures & Compensation

You must be 18 years old to participate. This experiment must be completed on a laptop or desktop computer, not a phone tablet or other mobile device. Additionally, sound must be enabled.

If you decide to participate in this study, you will be asked to complete four short tasks:

- The first task will be to complete a short situational preference questionnaire. This will allow us to identify your thinking style.
- The second task will be to complete an interactive investment activity with another person who is online at the time.
- The third task will be to watch a short video which will last approximately 1 minute.
- The fourth task will be to answer questions about the video and about other parts of the study.
  - This experiment take most people 20 minutes or less to complete.
  - You will have a 1 in 10 chance of winning an Amazon gift card. The value of the gift card will depend on the decisions made during the investment activity.

You may participate only once.

Continue
Procedures & Compensation

We are researchers at Loyola University Chicago (LUC) studying the nature of various thinking styles. You must be 18 years old to participate. This experiment must be completed on a laptop or desktop computer, not a phone tablet or other mobile device. Additionally, sound must be enabled.

If you decide to participate in this study, you will be asked to complete four short tasks:

- The first task will be to complete a short situational preference questionnaire. This will allow us to identify your thinking style.
- The second task will be to complete an interactive investment activity with another person who is online at the time.
- The third task will be to watch a short video which will last approximately 1 minute.
- The fourth task will be to answer questions about the video and about other parts of the study.
  - This experiment take most people 20 minutes or less to complete.
  - As compensation, you will receive $1.00 for the completion of this experiment. The researcher reserves the right to deny payment if the survey is incomplete or the participant did not follow instructions.
  - You will also have a 1 in 10 chance of winning an Amazon gift card. The value of the gift card will depend on the decisions made during the investment activity.

If you decide to participate in the study, you will receive instructions about a code on the last page of the experiment. Please place this code into the textbox provided on the posting for the experiment on MTurk to verify that you have completed the expriment. Note: This HIT is periodically re-posted. If you’ve already completed the HIT previously, please do not complete it a second time. You will not be compensated a second time. You will know quickly whether you have completed this survey before, and if so, please return the HIT.

You may participate only once.
LUC Thinking Study

Description of the Research
Hello, my name is F. A. Martin and I am working to complete my master’s degree at Loyola University Chicago. I am inviting you to participate in a research study concerning various thinking styles. My faculty sponsor, Jim Larson, has approved of this study, and its completion will help me to finish my master’s degree. I anticipate that approximately 300-400 individuals will participate in this study, and I thank you in advance for your cooperation.

Confidentiality
Confidentiality will be maintained to the degree permitted by the technology used. All data will be kept in a password-protected file. Your Mturk worker IDs will not be linked to your responses, and your individual privacy will be maintained in all published and written data from the study. Only the listed researchers will have access to the data, and identifying information will be stored separately from response data. All identifying information will be destroyed, once the study has concluded and all of the prizes have been awarded (1 week after the data has been collected).

Voluntary Participation
Participation in this study is voluntary. If you do not want to be in this study, you do not have to participate. Even if you decide to participate, you are free to withdraw at any time (by simply closing your browser) without penalty.

Contacts & Questions
If you have questions about this research study, please contact the researcher, F. A. Martin at lucthinkingstylesstudy@hotmail.com. If you have questions about your rights as a research participant, you may contact the Loyola University Chicago Office of Research Services at 1 (773) 508-2689.

Statement of Consent
If you agree to these terms, wish to participate in this study, and are 18 years of age or over, please press check the box below and click “Next.”

☐ I am at least 18 years old and I agree to participate.
APPENDIX C

SIGN-IN
Sign in

Name: Participant

Email: Participant@yahoo.com

Submit Query
APPENDIX D

SITUATIONAL PREFERENCES QUESTIONNAIRE
Situational Preferences Questionnaire

You will see two statements on each of the following screens, please read each pair of statements, and decide which seems truer.

In some cases, both statements may appear to be true. If this occurs, select the option that is more consistently true. Likewise, if you encounter a pair of sentences where neither option seems very true, one may still be slightly truer. Please select the option that seems truer.

Do not spend too much time on each question. Please answer according to your initial reaction.

Start

Situational Preferences Questionnaire

1. A. When faced with a problem I prefer to try new strategies or methods to solve it.
   B. I pay more attention to the parts of a task than to its overall effect or significance.

2. A. I care more about the general effect than about the detail of the tasks that I do.
   B. I like projects that have a clear structure and set plan and goal.

3. A. Before starting a task, I like to figure out for myself how I will do my work.
   B. I like to work on projects that deal with general issues and not with minute details.

4. A. I like problems where I need to pay attention to detail.
   B. I like situations where I can try new ways of doing things.

5. A. I like to do things in a way not used by others in the past.
   B. I like situations or tasks in which I am not concerned with details.

6. A. I like to deal with major issues or themes, rather than details or facts.
   B. I like to challenge old ideas or ways of doing things and seek better ones.

7. A. I feel happier about a job when I can decide for myself what to do and how to do it.
   B. I like situations in which my role is clearly defined.

8. A. When working on a task, I like to start with my own ideas.
   B. When discussing or writing on a topic, I think the details and facts are more important than the overall picture.
9. A. I like to participate in activities where I can interact with others as part of a team.  
   B. I like problems that allow me to look at a situation from a different perspective.

Situational Preferences Questionnaire

Thank you for completing the questionnaire.

This questionnaire was designed to assess your thinking style. While there are several different thinking styles, the two most common are the P and the G thinking style. Your pattern of responses indicates that you possess the thinking style indicated by the letter below:

Next
APPENDIX E

INVESTMENT ACTIVITY INSTRUCTIONS
**Investment Activity Instructions**

You will participate in a series of investment-related activities. To perform these activities, you will be paired with other people who are currently on the website. Each pair consist of an Investor and a Fund Manager. At the outset, you will randomly be assigned to one of these roles, and you will have this role throughout the rest of the session. If there aren’t enough participants online at the time you begin the study, you will be asked to come back at a different time. You will not know the identities of the other participants you interact with, nor will they know who you are. The only information that you will be able to see, and that others will be able to see about you, is your identification number and thinking style letter. Some participants may have the same thinking style as you, others may not. All identification and response information will be kept strictly confidential, and you will be notified if you are awarded an Amazon gift card. The value of the gift card will be determined by the decisions made by you and one of your partners during the activity.

You will participate in up to seven rounds of the investment activity, depending on how many people are one the website when you begin.

Next
Investment Activity Instructions

Step 1
The investor will click on an Endowment Spinner that will determine whether he/she will be given $5, $10, or $15 by the computer.

Step 2
The Investor will then have the opportunity to place a portion of the endowment into a general fund. This will not actually appear on-screen.

Step 3
Whatever amount the investor decides to place in the general fund will then be doubled, tripled, or quadrupled as determined by a Multiplier Spinner.
Step 4
At this point the Fund Manager will have the option of returning any portion of this doubled, tripled, or quadrupled amount to the investor, keeping the rest for him/herself.

4. Indicate the dollar amount that you would like to return to the investor. Must be between 0 and ??.

Next
Here is an example of how it works:

Step 1
Suppose the Investor clicks on the Endowment Spinner and it lands on $10.

Step 2
Suppose he/she then decides to place $5 in the general fund, and keeps $5 for him/herself.

Step 3
Suppose the Investor clicks on the Multiplier Spinner and it lands on 3, so that the $5 that the investor placed in the general fund is now worth $15.
Step 4
Control over the contents of the general fund now passes to the Fund Manager. He/she now must decide how much of the general fund to keep, and how much to return to the Investor.

Suppose he/she decides to return $5 to the investor. Now both the Investor and the Fund Manager have $10 dollars. The Investor has the $5 that he/she kept from the endowment plus the $5 the Fund Manager returned. While the Fund Manager has the $10 that he/she kept from the General Fund.

To Begin
Click “Next” to determine if you will be playing the role of Investor or Fund Manager.

Next

ID:9610581

You are assigned to the role of “Fund Manager.”

Please make decisions during the investment activity wisely, here is why:

- 1 out of every 10 participants in this study will be randomly selected to receive an Amazon Gift Card.
- The value of the gift card will be determined by the dollar amount you end up with at the end of one of the rounds.
- Which round that is will be randomly determined after all of the data has been collected.
- All participants will be notified via e-mail as to whether or not they have been randomly selected to win an Amazon Gift Card 1 week after all of the data has been collected.

Click “Next” if you are ready to begin the first round.

Next
APPENDIX F

INVESTMENT ACTIVITY CLEAR CONDITION
1. The investor has been given $15.
2. The investor has placed $4 into the general fund.
3. The general fund has been multiplied by 4. Thus there is now $16 in the general fund.

4. Indicate the dollar amount that you would like to return to the investor. Must be between 0 and 16.

You will keep $14.

Submit

Click submit to go to the next round with a new participant.
APPENDIX G

INVESTMENT ACTIVITY CLOAKED CONDITION
1. The investor has been given $\text{??}.
2. The investor has placed $\text{??}$ into the general fund.
3. The general fund has been multiplied by $\text{??}$. Thus there is now $\$16$ in the general fund.
4. Indicate the dollar amount that you would like to return to the investor. Must be between 0 and 16.

You will keep $\$16$.

Click submit to go to the next round with a new participant.

Error: The other participant has JavaScript disabled, spinner values cannot be displayed.
APPENDIX H

VIDEO QUESTIONNAIRE
The following video will only run for approximately 1 minute and will have sound. Please turn the sound on. It is very important that you pay close attention to the following video, as you will only be able to view it once, and will not be able to pause or rewind it.

Video Questionnaire

1. Did you watch the entire video?
   Yes     No

2. Please indicate the degree to which you were either focused or distracted while viewing the video.

   1       2       3       4       5
   very distracted  somewhat distracted  neither distracted nor focused  focused  very focused

3. Did you notice that some of the background items were different colors at the end of the video than they had been in the beginning of the video?
   Yes     No

   *If the participant answers “No” then he/she should continue to question number 4, without ever seeing questions 3a, 3b1, or 3b2.*

3a. *If they answer “Yes.”*
You are correct in stating that one or more items (not including the cards) changed colors over the course of the video. How many items were different colors at the end of the video than they had been in the beginning?

1 2 3 4 5 6 7 8

3b1. *If they choose 2-8 for 3a, then they should get this question, without ever seeing
3b2. * Please identify which items were a different colors at the end of the video than they had been in the beginning of the video.

A. The color of the background curtain.
B. The color of the lamp.
C. The color of the table clothe.
D. The color of the woman’s hair.
E. The color of the woman’s ring.
F. The color of the woman’s shirt.
APPENDIX I

EXIT QUESTIONNAIRE
Exit Questionnaire

1. Please state your age? __________

2. How do you racially identify? __________

3. What country do you live in? __________

4. Do you feel that the situational preference questionnaire accurately reflects your thinking style?
   Yes   No

5. How many rounds of the investment activity did you engage in?
   1    2    3    4    5    6    7    8

6. How many rounds of the investment activity did you engage in with people who had the same thinking style as you?
   0    1    2    3    4    5    6    7

6. Did you experience any computer difficulties during the study?
   Yes   No

   If “Yes” please comment. __________

7. Did any of your interaction partners appear to experience any computer difficulties?
   Yes   No

   If “Yes” please comment. __________

8. What year were you born? __________

9. What do you think was the purpose of the study? __________
APPENDIX J

DEBRIEFING STATEMENT
Dear LUC thinking styles study participant,

I am writing to you for two reasons: (a) to thank you for participating in the Loyola University Chicago thinking styles study, and (b) to provide you with some additional information about that study.

But first, let me remind you that as part of your compensation for participating in this study you had an opportunity to win an Amazon gift card. As described when you first did the study, you were entered into a drawing with 9 other participants, and one of you was randomly selected to receive a gift card for the amount that you retained—that was not given back to the Investor—at the end of one of the investment activity rounds (see below for more details about the investment activity).

**If you have won an Amazon gift card, it has been attached to this e-mail!**

As you may recall, in this study you were asked to complete four tasks: (a) fill-out a short situational preference questionnaire, (b) engage in four rounds of an interactive investment activity, (c) watch and answer some questions about a video, and (d) fill-out a short exit survey.

Of these four tasks, the interactive investment activity was the most important. Its primary purpose was to explore the relationship between trust and reciprocity. Specifically, it was used to examine whether our tendency to reciprocate the trust of another person is affected by (a) the clarity of that person’s intentions to trust us, and/or (b) the similarity of that other person to us.

During the investment activity you were assigned to the role of Fund Manager, and you had to decide how much of an investment fund to return to an Investor after that fund had grown in size. You did this four different times with four different Investors. Because it was important to standardize the behavior of the Investors, all of their actions were preprogrammed.

In order to answer one of our research questions, we first assessed each participant’s thinking style. Although there are many different thinking style dimensions, the thinking style questionnaire used in this study assesses only one dimension: a person’s preferred *level* of thinking. The answers you gave on that questionnaire indicate that you possess a Local thinking style. This means that you tend to prefer dealing with very concrete problems that require a more detail-oriented solution, than with larger, more abstract issues.
Our purpose in using the thinking styles questionnaire was simply to draw attention to the similarities and differences among people on this characteristic. Much the same thing might have been accomplished by calling attention to other characteristics, such as participants’ gender, nationality, or political party affiliation.

In two of the investment activity rounds, Fund Managers were paired with Investors who were identified as possessing the same thinking style as them (and so were similar to the Fund Manager in this respect). In the other two rounds, Fund Managers were paired with Investors who were identified as possessing a different thinking style than them (and so were different from the Fund Manager in this respect). In each of these two situations, Fund Managers played one round under conditions in which the Investor’s intentions to trust them (or not) should have been clear. They also played one round in each situation under conditions in which the Investor’s intentions to trust them (or not) should have been unclear.

The results of the study suggest that whether the Investor’s thinking style was similar to or different from that of the Fund Manager made very little difference when the Investor’s intentions to trust (or not) were clear: approximately the same level of reciprocation (money returned to the Investor from the fund) was observed, and varied only according to the size of the Investor’s initial contribution to the that fund. However, when the Investor’s intentions to trust (or not) were not clear, the Fund Manager’s reciprocation depended significantly on whether or not the Investor’s thinking style was similar to the Fund Manager’s own thinking style. When their thinking styles were similar, the Fund Manager reciprocated more—returned a larger proportion of the fund to the investor—compared to when their thinking styles were different. Thus, it seems that when the intentions of our interaction partners are ambiguous, we tend to treat those who are similar to us a little better than those who are different. But when their intentions are clear, we treat everyone the same.

Finally, as part of the study you were also asked to watch and answer some questions about a short card-trick video. However, due to technical difficulties, many participants were unable to see the video. If you did not get a chance to see it and would like to know what is was all about, here is a link to that video: http://youtu.be/v3iPrBrGSJM. And if you were able to see the video during in the study, and would like to know more about how the card-trick was done, you can learn how by clicking the link above. Once again, thank you for participating in this study.

Best wishes,

F. A. Martin
lucthinkingstylesstudy@hotmail.com
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Best wishes,

F. A. Martin
lucthinkingstylesstudy@hotmail.com
REFERENCES


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VITA

Martin was born in Huntsville, Alabama and raised in Milwaukee. Before attending Loyola University Chicago, she attended Cleveland State University, where she earned a Bachelor of Arts in Psychology. At Loyola, Martin works directly with Dr. James R. Larson Jr. on studies regarding decision making in small groups. She also works with Dr. Larry G. Martin at University of Wisconsin – Milwaukee on research regarding concept mapping and learning practices in GED preparation programs. Martin has co-authored and presented posters at annual meetings of the Midwestern Psychological Association, the Association of Psychological Science, and the Midwest Research-to-Practice Conference. In addition, she has co-authored a publication entitled “A Critical Review of Concept Mapping Research Literature: Informing Instructional Practices in Urban GED Preparation Programs” and a manuscript based on this thesis entitled “The Joint Effect of Partner Trust Cues and Group Membership On the Trustworthiness of an Actor’s Behavior” is currently under review.

Currently, Martin is pursuing her PhD in Applied Social Psychology at Loyola University, and living in Chicago, IL.